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regional official plan ...



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CITY OF OTTAWA

TESTIMONY ON THE SCALE OF GROWTH

REGIONAL OFFICIAL PLAN

ONTARIO MUNICIPAL BOARD HEARINGS

April, 1977

Eskandar B. Nabatian

45 Pages



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FOREWORD

This is the report of my testimony to the Ontario Municipal Board (OMB) on March 10, 1977 and again on March 14, 1977. This testimony was made on behalf of the City of Ottawa on the Scale of Future Growth (Appendix C) of the Official Plan of the Regional Municipality of Ottawa-Carleton (Region). The format of this report is identical to the format and the order of presentation to the OMB. Though it may not be the best structure for a report, it is intended to replicate the atmosphere of the OMB hearings and the exact manner of my testimony.

In reading this report, it should be remembered that the City of Ottawa is an objector to the Official Plan. The purpose of this testimony has been to critically evaluate the plan and to show a more reasonable alternative. In some ways, criticisms made to the Official Plan could also apply to the work described in this report. It should, however, be recognized that the City has not intended to undertake a Regional Official Plan. Recognizing the City's responsibilities versus the Region's, and given a limited amount of time and staff resources, the city's intention has been to substantiate its objections to the Plan not only by criticizing it, but also by offering other viable alternatives.

E.B. Nabatian

April, 1977

EBN/eh

PART I

A Critical Review of Studies Used As the Basis Of The
Regional Official Plan

Summary

In this part, the population and employment projection sections of several reports, which were heavily relied on by the Regional planners, are critically analyzed. It is shown that these studies contain certain assumptions which by 1971 (i.e. when the draft official plan was being written), should have been found by the Region to be clearly erroneous and invalid. The conclusion of this part is that, although these reports should have been considered by the Region, they should not have been used as the basis of the Official Plan's section on the Scale of Future Growth.

I-1: "Economic Prospects Study"

This report was prepared by Larry Smith & Company in 1963 for the National Capital Commission. The area of study in this report is the National Capital Region (NCR) of which the RMOC is the major part. This report has been heavily relied on by the Region's planners.

On page 52 of this report, population of Canada is projected under three (3) different assumptions (table 1). All three (3) projections reflect natural increase rates of 19.5 to 19.7 per 1,000 throughout the projection period which is 1964-1986. When death rates are included in these natural increase rates, birth rates of approximately 27 births/1,000 women will result. In other words, the report assumes the 1963 birth rate of 27 per 1,000 for the entire projection period. This is clearly an invalid assumption since birth rates have been continuously declining since 1963. An annual publication by Statistics Canada, Vital Statistics, entitled as well as provincial publications publish national, provincial, and even regional birth, death and migration rates yearly. By 1971-1972, birth and death rates for up to the year 1970 were available. For 1970, birth rates for Canada and for Ontario had declined to between 17-16 births per 1,000 women. A decline of 10 in the birth rate is very significant and therefore, the Region should have been aware of the over projection in table 1. It is true that net migrations of 0 to 75,000 per year to Canada are low and they should have resulted in low population projections. However, in this case, over-projection as a result of using high birth rates has more than compensated for low immigration. This is evident from the following comparison:

Comparison of Projected and Actual Population, Canada

(numbers in millions)

	1971	1976
Projections (L. Smith)	22,08 - 22.88	24.32 - 25.59
Actual	21.56	22.59 (preliminary)
Over Projection	.52 - 1.32	1.73 - 3.00

TABLE 1

CANADIAN POPULATION
(in 000's to nearest 10,000)

	<u>Projection</u> #1	<u>Projection</u> #2	<u>Projection</u> #3
1962 (DBS Est.)	18,570	18,570	18,570
1971	22,080	22,580	22,880
1976	24,320	25,120	25,590
1981	26,790	27,920	28,580
1986	29,510	31,000	31,870
Average Annual Rate	2.46%	2.79%	2.99%

Notes:

Projection #1 reflects natural increase of 19.5 per 1,000 only. Slightly lower than 1956-60 experience. Implies net migration of zero.

Projection #2 reflects natural increase of 19.5 per 1,000 plus average net immigration of 50,000 per year, one half of the 1951-61 experience.

Projection #3 reflects natural increase of 19.7 per 1,000 plus average net migration of 75,000 per year.

SOURCE: An identical reproduction of page 52,
ECONOMIC PROSPECTS, L. Smith, 1963

In other words, by 1971, the report's projections were 1/2 to 1.3 million too high. For 1976, the corresponding figures are 1.7 to 3.0 million. Population estimates for Canada for each year in the period 1964-1970 were also available in 1971-1972. Therefore, the Regional planners should have been aware of the over-projections in this report and should not have assumed overly optimistic population growth for Canada (and therefore, for the RMOC).

The above comments and conclusion also apply to page 13 of this report (table 2) which shows a projected population of 947,700 for the NCR in 1986, using the Cohort Survival method. The comparison between these projections and actual population show an over projection of 18,000 in 1966, i.e. three years after the report was completed:

Comparison of Projected and Actual Population, NCR

(numbers in thousands)

	<u>1966</u>	<u>1971</u>
Projection (NCR)	558.0	643.2
Actual (CMA)	528.7	602.5
In RMOC but not included in CMA	15.3	19.6
Overprojection	18.0	21.1

In addition to the Cohort survival method, the report also projects population based on projected employment (page 12).

The results of this method are as follows:

	<u>1962</u>	<u>1986</u>
Total Employment	179,000	294,000
Population	487,000	810,000
Employment/Population	.36	.36

This method of population projection is more appropriate for the Ottawa area than the Cohort Survival method. This is because of high migration into the Ottawa area induced by Federal employment opportunities. However, the assumption in the report that employment to population ratio (gross participation rate) will remain constant up to 1986 is clearly invalid. In fact, in 1971, this ratio had already increased to .42 (198,000 jobs \div 472,000 population = .42). This means that in 1962 one job supported 2.8 persons ($1 \div .36 = 2.8$) whereas in 1971 it supported 2.3 persons ($1 \div .42 = 2.3$). These facts as well as the general trend toward higher employment participation by most age groups, particularly by women, were known in 1971. Had the report allowed for higher participation rates, its population would not have been over projected. The Region should have recognized this trend and it should have either adjusted the projected population downward or totally disregarded it. There is no justification for relying on projections which were known in 1971 to be too high.

I-2: "Ottawa Central Area Study"

This report was prepared by Hammer, Greene, Siler Association in 1969 for the Ontario Department of Highways, the National Capital Commission, and the City of Ottawa. The Region has made extensive use of this report in preparing its growth projections.

Page 30 of this report presents employment data which contains an error.(1) This error is overprojected into the future employment estimates. For example, table 5 on page 32 shows a projected manufacturing employment of 57,700 by 1996 for the NCR. This projection is considered extremely unlikely

(1) Table 2 on this page shows estimated manufacturing employment figures of 20,670 for 1962 and 23,380 for 1968. However, the Census data gives 17,900 and 18,900 respectively for the same years.

TABLE 2

NATIONAL CAPITAL REGION POPULATION 1963-1986

COHORT SURVIVAL PROJECTION

<u>Age Group</u> <u>Years</u>	<u>1963</u>	<u>1986</u>
0 - 9	117,340	198,600
10 - 19	94,260	167,620
20 - 29	75,320	156,690
30 - 39	70,670	138,860
40 - 49	61,990	106,740
50 - 59	44,060	80,660
60 - 69	29,340	60,460
70 and over	21,160	38,070
Total	514,140	947,700

NOTES: Birthrates - 1961-71, 27.0; 1971-81, 26.5; 1981-86, 26.0.
 Mortality rates - Age specific, trends as indicated in Output, Labour and Capital, p. 166.
 Net migration - Constant in absolute numbers - 67,775 per decade, 1951-61 experience.

SOURCE: An identical reproduction of page 13,
 ECONOMIC PROSPECTS, L. Smith, 1963

even by the Region. In fact, the highest projection of manufacturing employment among all studies to-date, including the Official Plan, is about 25,000. The reason for this, among others, is that being close to the established industrial centres of Montreal, Toronto, Cornwall, and Kingston, Ottawa has not and is not likely to be very attractive to industries. The report also assumes high growth rates for other sectors of Ottawa's economy. The result of all this is a projected total employment of 519,000 for the NCR by 1996.

The population forecast on page 33 is based on the above projected employment (this method has been agreed by all to be an appropriate methodology for the Ottawa area). However, table 6 on the same page shows that the 1968 participation rate of 34.77% (i.e. 2.88 persons per job) has been held constant to the year 1996. This has resulted in a required population of approximately 1.5 million to support the projected employment of 519,000. As stated previously, participation rate in 1971 had already increased to 42% (i.e. 2.38 persons per job) and the trend has been toward higher participation rates since the early 1960's. Again, a more realistic participation rate would have resulted in lower population projections in this report.

Similar to the case of L. Smith's report, these errors and discrepancies were known to the Region (or should have been known) in 1971-1972 and therefore, the Region should not have based its future scale of growth in the Official Plan on these overprojections.

I-3: Other Reports

Several other studies (2) were considered by the Region for the Scale of Growth. These reports:

- 1 - were either disregarded because they contained "low" projections (e.g. "prospective Population Growth"): or
- 2 - their projections, for some unknown reasons, were adjusted upward (e.g. MacLaren-Richards projected a population of 750,000 for the year 2001 and 1 million for the year 2030 for the RMOC): or
- 3 - they contained errors and discrepancies similar in nature to the above two studies.

I-4: Discussion

As witnessed by both the Region's reports entitled "Official Plan - summary of Technical Reports" and "Technical reports number 1-3" and by Mr. John Wright's (3) testimony of March 1-2/77, the analyses of all these studies have been simplistic and superficial. It appears that none of these studies has been critically evaluated by the Region. The factors and components of growth have not been examined. The assumptions in these reports have not been questioned.

One gets the clear impression that the Regional planners just looked at the results of these studies with no regard for their assumptions and methodologies, and then selected a target population of 1 million. The question of the likelihood or the probability of reaching this population at certain point(s) in time has not been addressed. The Region has clearly favoured the high projections in these studies without being concerned with their validity. The basis for the target population of 1 million, has been the projections in these studies. Since these studies contain assumptions which the passage of time to 1971 had already shown to be substantially in error, their use as the basis of the Regional Official Plan seems inappropriate.

(2) These include: "Report and Technical Discussion", MacLaren-Richards, 1970
 "A Functional Plan for the Health Sciences", Llewellyn -
 Davis, 1970
 "Prospective Population Growth", Perks & Kapoor, 1970

(3) Commissioner, Regional Planning Department. He has been the Region's main witness for the Official Plan.

The reason why the Region did not undertake its own population study is that a number of competent studies had already been done and therefore, it was decided that a new study was not necessary. One has to assume that if the Region had critically analyzed the assumptions in these studies, it would have concluded differently. Otherwise, one is left with the conclusion that the Region thinks these studies are valid forever which implies a grave lack of appreciation for the dynamics of growth and the complexities of our time. It is only the best of forecasters and demographers who warn the users of their projections of the necessity to periodically review their assumptions and to adjust the projections accordingly. Regardless of how "competent" these studies appeared to be this type of reasoning for not critically evaluating them before basing an important document such as the Official Plan on them is very unconvincing.

The Official Plan does not state that the 1 million population is its goal rather than its projection. However, the Region has not undertaken its own population study; it has but taken a superficial look at the existing studies. It has not addressed the issues of the source, magnitude, and components of growth. It has just "selected" a total population of 1 million without addressing the age-sex composition or the staging of this population. Under these circumstances, how can one look at the 1 million population in any way other than as a goal?

1.5 Conclusion

Reports which were used to base the Scale of Future Growth section of the Regional Official Plan are themselves based on erroneous and questionable assumptions. These assumptions were known (or should have been known) to be invalid in 1971-1972. The Region should have studied these reports more critically and should have made an in-depth analysis of the sources, magnitude, and components of growth. It should have adjusted the projections in these reports according to facts, data, and trends known in 1971-1972 before considering them for the basis of the Official Plan. Better still, in recognition of the importance of the Official Plan as a document which provides direction for the future of this area, the Region should have undertaken a thorough study of the demographic data and trends to make an up-to-date population projection, including clearly defined periodic reviews, staging, and age-sex characteristics of the projected population for this area.

PART IIA Critical Review of the Scale of Future Growth Section of the Official PlanII-1: Canada's Future Growth

Section 2.1.1 of the plan, entitled "perspective" starts by selecting a projected population of 38 million for Canada by the turn of the century. This is among the highest projections made for Canada during 1970-71. There were also several projections of between 30 to 34 million available at that time. The reasons for why the Regional planners selected a projection of 38 million compared to other projections has not been explained. The choice appears to have been rather arbitrary though consistent with high growth assumptions. Of course, it is not expected that the Region should have first made a population projection for Canada, and then one for the Region. But the selection of the second highest population projection for Canada (the highest being 40 million) implies a certain set of biases or preferences on the part of the Regional Planners (this will be further explored in this section). In fact, it is not surprising to say that the projection of 38 million population was selected for Canada to support the selection of 1.5 million population (which was the highest projection in 1970) for the Ottawa-Hull CMA. This latter selection, of course, lends support to the selection of 1 million population for the RMOC, which is roughly the same as the Ontario portion of the Ottawa-Hull CMA. All these selections are consistent with each other but, as will presently be shown, they are all based on excessively high growth assumptions.

Statistics Canada's catalogue number 91-514 contains population projections for Canada and the provinces. There are four sets of assumptions in this study which have resulted in four sets of projections. The range of projections for Canada is a low of 28.3 million to a high of 34.6 million for the year 2001. The highest projection, which is referred to as projection A, assumes a high fertility rate of 2.6 births per woman and a high net immigration of 100,000 per year. Despite these high growth assumptions, its projected population for Canada is 34.6 million around the turn of the Century. Any projection which shows a population greater than 34.6 million for Canada requires either one or both of the following conditions:

- 1 - fertility rates to increase to higher than 2.6 births per woman in the child bearing ages (15-49)
- 2 - net immigration to Canada to increase to higher than 100,000 per year.

Regarding fertility, its value has been continuously declining since the early 1960's. In 1970, its value was considerably below 2.6 (approx. 2.2). Furthermore, it was generally agreed by demographers then as it is now, that fertility rates are expected to continue their declining trend with minor fluctuations before levelling off. They have not been expected to reverse themselves back to their 1950 values primarily because of the introduction and the massive use of the birth control pill. Therefore, excessive growth is highly unlikely to come from natural increase. This leaves only immigration. In 1971-1972 as in the last couple of years and assuming no major historical events, foresight in planning would indicate that net immigration levels substantially greater than 100,000 to 150,000 per year would be neither desirable nor very likely. One would have to at least undertake a minimum analysis of the likelihood and the consequences of excessive immigration before assuming or accepting that about half of the population growth will be from immigration. Without such analysis, the assumption of high immigration and therefore, high population projection is unfounded. In 1970, there were population projections as low as 30 million for Canada by the year 2001. Studies since then have been confirming projections under 34 million for Canada. Presently, the most likely projection of population for Canada is 29-30 million by the year 2001. This is from a widely accepted study undertaken by the Ministry of State for Urban Affairs (MSUA) in 1975 which uses up-to-date data and takes into consideration the recent Federal policies on immigration. In view of both the projections before 1970 and those since then, the Region's selection of a population of 38 million for Canada by the turn of the century is unsubstantiated and questionable.

11.2: The Region's Future Growth

This section of the plan is very brief (1½ pages) but it contains a number of far-reaching assumptions, statements, and conclusions most of which are unfounded and/or contradictory. There is no discussion or rationale for these assumptions and conclusions either in the main body of the Plan or in its accompanying reports. One cannot help but conclude that the selected levels of growth are only based on a desire for growth by the Regional Planners. A number of these contradictions and inconsistencies are discussed below.

The plan correctly states that: "the actual rate of growth in the planning area will depend primarily upon the policy of the Federal Government, secondarily on policies of the Provincial Government, and to a much lesser extent on municipal policies". And again: "Policies of the Federal Government as well as changing attitudes toward work, birth control, and the consumption of energy and resources will influence the rate of growth". Then, without any contact at the administrative and/or the political level with the Federal Government to assess the likely future growth of the Federal Government, and, furthermore, without any economic analysis at all, the plan makes the critical assumption that: "For the purposes of this plan, it is assumed the economy of the country is likely to develop in the future in a way similar to that of the recent (4) past". This assumption is basic to the entire Official Plan document. In particular, it forms the premise on which the Scale and the Distribution of Growth Sections of the Plan are predicated.

The aforementioned assumption is however, completely unsubstantiated either in the Plan or in its supporting documents. There is no discussion or justification for it. Nowhere is an attempt made to explain why this assumption is valid even for the purposes of this Plan. On the other hand, the uncertainties and complexities of our time make this assumption very questionable. In a free enterprise economy, there are simply too many fluctuations to make this assumption valid. A flexible plan should seriously consider more than just one set of assumptions as its basis.

The slow population growth of the last seven years and in particular, the sluggish economy of the last three years, both in Canada and in the Ottawa area, coupled with the Federal decentralization programme, further support the equal consideration of a slow to medium growth alternative in this Official Plan. The Plan does state that: "periodic review of this plan will consider the consequences of alternative growth rates". However, it is not indicated when, or at what level of growth, or under what circumstances such periodic reviews will take place. In any case, the Plan in its present form is based only on the high growth assumptions of the 1960's and it does not provide any alternative to a population of one million between 1998-2015. The lack of any staging in the plan as well as its rigidity on growth assumption are probably the Plan's major weaknesses.

To reach a population of one (1) million by 1998, the average growth rate per year of 3.3% from the period 1961-1971 must be experienced. To reach the same population by 2015, the average numerical increase of 12,000 persons per year (from 1961-1971 again) must be realized. As tables 3 and 4 show, in the first five (5) years of the planning period, actual growth in the Region has been 1.2% or 6,200 persons per year. When total population is adjusted upward by 3 to 4% to account for the difference between preliminary and final census results, the growth in the first five (5) years still falls at least 30% short of the required growth to realize a population of one (1) million between 1998-2015. The first five (5) years

(4) The recent past has been defined elsewhere in the plan to mean the period 1961-1971.

Table 3
ACTUAL CENSUS POPULATION

AREA	1971		1976
	1971 Boundaries	1976 Boundaries	
Ottawa - Hull CMA	602,500	619,850	672,150
Ontario Portion	453,300	474,150	503,850
Quebec Portion	149,200	145,700	168,300
RMOC	471,500	472,765	503,000

Ottawa-Carleton

City of Ottawa

City of Vanier

Rockcliffe V1

Nepean Twp.

Gloucester Twp.

March Twp.

Cumberland Twp.

Goulburn Twp.

Osgoode Twp.

Rideau Twp.

WEST CARLETON TWP.Ottawa-Hull CMA

(Ontario Portion)

City of Ottawa

City of Vanier

Rockcliffe V1

Nepean Twp.

Gloucester Twp.

March Twp.

Cumberland Twp.

Goulburn Twp.

Osgoode Twp.

Rideau Twp.

CLARENCE TWP.

Sources: Census 1971

Census 1976 (Preliminary)

Table 4

CENSUS POPULATION FOR OTTAWA-HULL CMA

Municipality	Population 1971*	Population 1976	Absolute Change	Percentage Change
City of Ottawa	302,340	291,100	-11,240	-3.7%
City of Vanier	22,475	19,615	-2,860	-12.7
Rockcliffe Village	2,135	2,017	-118	-5.5
Gloucester Township	37,145	56,445	19,300	52.0
Lepean Township	64,600	75,870	11,270	17.4
March Township	5,820	7,931	2,111	36.3
umberland Township	9,295	12,175	2,880	31.0
Other (Ontario)	30,340	38,685	8,345	27.5
TOTAL (Ontario)	474,150	503,840	29,690	6.3
City of Hull	63,580	60,180	-3,400	-5.3
Pointe-Gatineau	15,640	23,085	7,445	47.6
Gatineau	22,320	25,520	3,200	14.4
Sylmer	7,200	14,520	7,320	100.1
Other (Quebec)	36,950	45,025	8,075	21.9
TOTAL (Quebec)	145,690	168,330	22,640	15.5
GRAND TOTAL (CMA)	619,860	672,160	52,300	8.4

* Based on 1976 boundaries

SOURCE: 1976 Census (Preliminary Results)
Statistics Canada

in this case are very important.

Submissions have already been made to the Board by the Region showing that in the period 1970-1974 the Ottawa area experienced a very high level of Federal employment growth (approximately 8% per year). By any standard, employment growth of 8% per year is quite high. It is also known that about one half of Ottawa's population growth has historically been employment induced in migration from the rest of Canada. In view of this situation, the critical question is, if not in the first five (5) years when the Federal Employment growth was much higher than expected in the Plan (5), then when in the planning period can one expect the required growth of 12,000 persons per year to be realized? The importance of this point can hardly be emphasized enough: There has been a period of unusually high growth in employment without the accompanying high growth in population. The explanation for this is, of course, in the participation rate which has been much greater than anticipated by the Region. In view of the low Federal employment growth of the last two years (approximately 1.5% per year) which is expected to continue for at least another two years (through 1978), and also in view of the announced decentralization of 6,000 Federal jobs to the rest of Canada as well as the relocation of about 15,000 Federal jobs to the City of Hull by 1980, what evidence is there to support that the Region's population will even remain stable (let alone increase by 12,000 per year)?

The Official Plan provides no answer for these concerns which were known in 1971. Even disregarding the impacts of decentralization and relocation, it is unlikely that a population growth of 3.3% per year will take place in the Ottawa Area unless the growth of the Federal Government employment and the associated service industries exceed 8% per year for each of the remaining years in the planning period.

II.3 Components of Population

Another major weakness of the Official Plan's so-called projection of 1 million population is its lack of the components and the structure of this population. The planning requirements of the different population groups are clearly not identical. One has to know the age and sex structure of the population in order to assess its planning needs and its growth potential. It makes a great deal of difference whether, for example 40 or 50 percent of the population is younger than 20 years of age. The percentage and actual number of females in each age group are also essential to an understanding of the growth potential of the population as a whole. The Plan's projection of one million does not address the very important planning issues of age (e.g. how many under/over 65 years of age), basic characteristics (e.g. what percent in-migrants, what percent labourers, etc.) and status (e.g. income, married, etc.). One is free to assume that this population is demographically old, middle-aged, or young. Each of these has far reaching and different implications for planning for the time a population of 1 million is reached as well as for after that point in time. It is primarily the age structure of the population which points to potential magnitude of household formation which is in turn translated into housing demand by housing type. There has been no explanation in the Plan's supporting documents as to why such basic aspects of population projection have been ignored. Therefore, the population of one million, even if achievable between 1998-2015, still leaves many questions and concerns unanswered.

II.4 Conclusion

Population projection is an essential component of an Official Plan. It provides insight into the future and it determines the overall direction for the rest of the Plan. It indicates what the future holds and therefore, assists planners to accelerate or decelerate the achievements of their planning goals and targets.

(5) The Plan projects an average growth of 2% per year for Federal employment.

11.4 Conclusion (Cont'd)

Planning for hospitals, schools, and recreational facilities are some of the more obvious areas that rely on short to medium term population projection. Capital budgeting, land banking by both private and public concerns for roads, residential, and industrial development require long term population forecasts in addition to the short and medium terms. Therefore, the planning process as a whole requires and relies on population projection.

Considering the centrality of population projection to other planning functions, and also the magnitude of future investment that is involved in the implementation of an Official Plan, it seems that a thorough analysis of the demographic factors leading to the projection of population is an essential starting point for an Official Plan. The cost of such an effort, in the context of the total time and cost for the entire plan, would probably be minimal.

The Region has not undertaken any demographic study for the Official Plan. What is presented in the Scale of Future growth is an unsubstantiated plan that is heavily growth oriented. Growth is not necessarily undesirable. However, one should make a distinction between objective expectation of realistic levels of growth, and simple reflection of a desire or a wish for growth. The Official Plan in its present form is only an expression of the desire for growth. Additionally, growth is a very controversial matter. A rigid imposition of a 112% increase in the population of the region from 472,000 in 1971 to 1,000,000 between 1998-2015, does not allow any consideration for the low to medium growth alternatives which, from a planning point of view, are equally viable and desirable.

Regarding the 1960's, in many ways it was an unusual era. Several important social movements were either borne or revived in this decade. The impacts of Citizen participation, concern for the environment, changes in values and life styles, and the introduction and massive use of the birth control pills will be felt for decades to come. These movements created new demands for services, and different levels of governments had to assume new responsibilities and functions.

As a result, the departments of Environment, Industry, Regional Economic Expansion, Ministry of State for Urban Affairs, and several other government agencies were created to meet the new demands. To assume that growth during 1971-2015 will be similar to the growth of the 1960's (as the Region does) is to assume that the same magnitude and dimension of growth which occurred in the 1960's will take place in the future. This is a very questionable assumption and in fact, the slow growth of the last three years coupled with the dissolution of new federal agencies such as Information Canada (dismantled in 1975) illustrate a reversal (though moderate) of the trends of the 1960's. The Scale of Future Growth section of the Official Plan cannot, therefore, be considered a valid document on growth.

PART III

City of Ottawa's Employment and Population ProjectionsII.I: Background

In parts I and II, it was shown that the Scale of Future Growth section of the Plan is based on simplistic assumptions and superficial analyses. It lacks the precision and sophistication that is normally expected of a population projection. There is, in fact, no methodology in the plan for the so called projected population of 1 million and the hypothesis and assumptions in support of this population are unsubstantiated and questionable. The rigid approach towards growth in the plan indicates a clear lack of appreciation for the dynamics and the controversial nature of growth.

It has been suggested in the Official Plan that in 1971-1972, up-to-date data were not available for a sophisticated method of population projection. Although it is true that the complete 1971 Census data were not available until after 1972, this does not justify a cursory analysis of the prospects for growth. In the first place, one does not need (although it would be helpful to have) complete demographic data up to and including the last point in time before undertaking a population study. Secondly, methodology also plays an important role in projections. As witnessed by studies completed in 1970 as well as those earlier studies which the Region has relied on, there was no shortage of sound, proven, and accepted methods of projection in 1971-1972 (6). The lack of complete data for 1971 Census also was not serious enough to jeopardize the results of a population study. Therefore, the Region's case for not having undertaken a thorough population study to base the future growth of this area on is unsubstantiated and unconvincing.

As a part of its on-going research projects, the City of Ottawa has carried out a study of population and growth for the Ottawa area. In the sections that follow, a brief description of this study followed by a comparison of its results with those of a few other studies during 1970-1976 is presented. It is contended that all of these studies are superior in approach, methodology, data, and results to those of the Region.

The City's projection of 737,000-823,000 population by the year 2001 for the RMOC is then recommended for substitution into the Official Plan in lieu of the current target of 1 million.

III.2: Methodology

A simulation system named SCOPE (System for Community Planning and Evaluation) has been used for population projection. This system was developed for the City of Ottawa during 1972-1974. Its main purpose was to develop a planning tool to simulate and assess the commercial infrastructure in the Ottawa area. In order to do this, the system first projects employment and population; and then households, income, and other factors which are related to purchasing potential and retail expenditures. There is a hierarchy of analysis in the System. It starts with an Economic Area (Canada was selected) and then a Regional analysis. The ultimate level of analysis is the neighbourhood which may be smaller than a Census Tract. The system (7) has built into it several forecasting techniques. The following three techniques have been used for this exercise:

- 1 - Shift-share technique for employment projection.
- 2 - User supplied growth rates for employment projection.
- 3 - The Cohort survival method combined with the above two for population projection.

(6) Walter Isard's: "Methods of Regional Analysis", 1960, for example offers dozens of projection techniques (this is a standard text in regional planning.)

(7) For further description of the SCOPE system, see "SCOPE - Summary Report", 1975, Planning Branch, City of Ottawa.

II.3: Employment Projection

In the Ottawa area, migration (including immigration) has traditionally accounted for approximately half of annual population growth. Because of the nature of employment in this area (primarily government and other services), this trend is expected to continue (there are, of course, other reasons for this trend which will be explained later). This situation makes an employment-based population projection more appropriate for the Ottawa area than the Cohort survival method. However, the latter method is superior for the projection of age and sex characteristics of population to other methods. Therefore, a combination of the Cohort Survival method and employment-induced population growth has been used to project population.

This combined method necessitates the projection of employment before population. The two sets of employment projections are briefly described below.

1) Shift-Share Approach

This is a fairly mathematical and sophisticated approach to the projection of employment. It isolates and analyzes three factors:

- 1 - The historic growth rates of all industries in the economic area (which, as explained in Appendix A, is Canada in the SCOPE system).
- 2 - The historic growth rates for those industries present in the region of analysis (in the SCOPE system, this is Ottawa-Hull CMA).
- 3 - The differences between the growth rates for industries in the region and those in the economic area.

The third factor shows the shift to or away from the region for all industries. This is of course, related to local labour market, resources, transportation, locational costs, etc. The shift and the share of each industry from the economic area are evaluated, analyzed, and adjusted by economists (8) for the future. Once all the coefficients of growth and other requirements of the shift-share equations are determined, the model is ready for application. The result of applying the shift-share technique to the Ottawa-Hull CMA is represented in table 5. It should be noted that, to provide a range of possibilities, growth assumptions which are very optimistic (but not completely unlikely) have been included in this particular application. These are illustrated under the columns (9) entitled "high" in table 5.

In this projection there is a precise relationship and inter-dependence among the growth of the employment sectors. The reason for the negative growth of -.55% in the primary employment sector is that the declining trend in employment coupled with an increase in capital expenditure and output in Canada, is expected to continue before levelling off. In the RMOC area, primary employment is expected to have a marginal increase. However, since its value is currently around 2,000 (i.e. less than 1% of total employment) changes in this sector will not have significant impact on the total economy of the area.

A sector by analysis of these projections is presented in the relevant publications in the bibliography, and therefore, they will not be repeated here. Suffice it to say that these projections reflect an optimistic growth option for the Ottawa area. Furthermore, they are completely consistent and in line with generally optimistic growth options for both the province of Ontario and for Canada.

(8) The author is not an economist and for the purposes of using the shift-share technique, one does not have to be an economist. The author has relied extensively on working sessions with several economists and on recent publications of the Economic Council of Canada. See bibliography for details.

(9) The columns entitled "medium" as well as required population and unemployment rate will be explained later.

Employment Category	1961	1971*	1986			Average Growth/Year (1971-1986)			2001			Average Growth/Year (1971-2001)	
			Medium	High	Medium	High	Medium	High	Medium	High	Medium	High	High
Primary	1,758	2,040	2,345	1,872	1.0%	- .55%	2,650	1,705	1.0%	- .55%			
Manufacturing	16,689	18,917	22,320	22,718	1.2	1.34	24,590	26,522	1.0	1.34			
Construction	11,095	13,601	19,720	20,763	3.0	3.51	23,800	26,290	2.5	3.11			
Transportation and Utilities	4,817	6,613	8,100	8,467	1.5	1.87	8,980	9,211	1.2	1.31			
Communications	5,887	8,083	11,380	11,636	2.7	2.93	13,900	13,587	2.4	2.27			
Trade	21,420	29,111	43,960	49,729	3.4	4.73	55,300	70,347	3.0	4.72			
Finance, Real Estate & Insurance	7,031	10,250	13,640	18,137	2.2	5.13	18,860	28,505	2.8	5.94			
Government	52,481	70,749	102,590	124,235	3.0	5.04	130,150	172,415	2.8	4.79			
Services	32,461	59,182	92,920	95,667	3.8	4.11	133,735	137,302	4.2	4.40			
Others.	4,073	17,578	26,025	24,749	3.2	2.73	36,035	31,920	3.5	2.72			
TOTAL	157,712	236,124	343,000	377,973	3.01	4.00	448,000	517,804	2.99	3.97			
REQUIRED POPULATION	429,750	602,500	774,000	835,600	1.87	2.60	940,300	1,080,100	1.87	2.63			
UNEMPLOYMENT RATE	3.4%	6.5%	For 1972-2001, an unemployment rate of 5% is included in the active labour force component of the required population										

* 1971 data based on 1971 boundaries; 1972-2001 based on 1976 boundaries

SOURCE: 1961 & 1971 Census of Canada
The SCOPE System, City of Ottawa

User supplied Growth Rate Approach

In this approach, the growth rates for each employment sector for various time periods are specified through a number of economic base analyses. The sectoral growth relations have to be analyzed so as to maintain a consistent interdependence. This analysis should be done in the context of a larger area's economic prospects such as a combination of several counties or the province. The knowledge of industries expected to come to or to leave the region can be incorporated into the appropriate growth rates and time periods. Same is true for the expected expansion, relocation, or decentralization of industries. Once the appropriate time periods are identified and the associated growth/decline rates for each sector are determined, the rest is simply a series of arithmetic operations. The key step in this approach is a solid economic base analysis of the region. It requires an extensive knowledge of the labour and the market situations in the area of study.

For the case of the Ottawa-Hull CMA, in addition to the publications listed in the bibliography, the author has relied on discussions with economists in TEIGA (for the Eastern Ontario Region), Economic Council of Canada, and private consultants.

Sectoral growth rates for several time periods were determined and calculations were done for each sector. The results appear in table 5 under the columns entitled "medium".

These results still represent an optimistic scenario for the Ottawa area because, despite the expected federal employment decentralization and its impact upon other employment categories, all sectors are assumed to experience growth. In particular, Government, Services, and Others, which account for more than 60% of the total employment, are assumed to grow at an annual rate of 3.0%, 3.8% and 3.2% respectively for 1971 to 1986, which is by no means a pessimistic growth assumption. The annual growth rates of 1.2% for Manufacturing and 3.0% for Construction for the same time period, are also considered to be optimistic for Ottawa-Carleton. However, compared to the shift-share's high growth scenario, these growth rates are more realistic. Consequently this set of projections is considered to be more probable.

III.4: Summary of Employment Projection

Two methodologies have been used to project employment in the Ottawa-Hull CMA to the year 2001, one of which is the shift-share technique which is a mathematically sophisticated projection methodology. To provide a range of growth possibilities, a set of overly optimistic growth assumptions was used with this technique. The result is a total employment opportunity of approximately 518,000 by 2001. This level of employment is not impossible to achieve, but it is highly unlikely. Employment levels greater than 518,000 by 2001 would be extremely unlikely.

The other methodology involves the determination of (economic) sectoral growth rates for several time periods. The result of this technique is a total employment opportunity of 448,000 by the year 2001 for the Ottawa-Hull CMA. Compared to the results of the shift-share technique, this is a more likely set of projections. Employment levels substantially below 448,000 by 2001, would represent pessimistic growth assumptions.

III.5 Population Projection

There are two parts in the projection of population in this report. In part one, the standard method of Cohort Survival is used to project Ottawa-Hull's population by age and sex distribution to the year 2001. In part two, the labour force component of this projected population is compared with the total number of projected employment opportunities from previous sections. Adjustments in the form of inmigration or out-migration are then made to the labour force to arrive at the population levels required to support the projected employment. Each part is briefly described below.

3. The Cohort Survival Method

This is a very straight forward projection methodology. As figure (10), every year the number of births (by sex) and deaths are calculated and population is adjusted accordingly. Before this process is repeated for the next year, the age of the population is advanced by one year i.e. everybody becomes one year older). Since the base year (1971) population data is by age and sex distribution, this methodology itself is standard and frequently used by planners and demographers. What causes different projections of population for an area, using this methodology, is the different sets of assumptions on fertility, mortality, and migration rates.

For the Ottawa-Hull CMA, the most detailed and up-to-date fertility and mortality rates have been used (see Appendix A). These rates are by age and sex groupings and they have been determined in consultation with several demographers at Statistics Canada and at TEIGA. They reflect the most recent and the most probable direction for fertility, mortality, and the labour force participation rates. Since these rates have been projected for a minimum of 7 age groups (birth rates) to a maximum of 30 age groups (death rates), moderate changes in the values of a few age groups will not cause substantial changes in the final projected population. For all practical purposes, therefore, appendix A represents the most reasonable fertility, mortality, and labour force participation rates.

These rates have been used in the Cohort Survival method to project Ottawa-Hull's population. The next step is to compare this projection with the population requirements of the two projected total employment of 448,000 and 518,000 by 2001. This is done in the next section.

3. Employment-Based Method

In order to determine the required population for each of the two employment projections on a year by year basis, it is first necessary to calculate the labour force component of the population projected by the Cohort Survival method. This is accomplished by multiplying the detailed participation rates in Appendix A by the projected population 14 years of age and over. This labour force is next adjusted to allow for an unemployment (11) rate of 5% (figure 1, fourth block from the bottom). The sum of these numbers will result in the total labour force. At this point, a comparison is made between the total employment opportunities (e.g. 448,000 or 518,000 in the year 2001) and the total labour force. If the total labour force is less than the total employment opportunities (as in the case of Ottawa-Hull), then there will be a positive net in-migration to fill the job vacancies. The next question is how many persons should be "imported" for each job vacancy. In 1971, each job supported (i.e. required) 2.29 persons in the Ottawa Area. Since the 1950's this trend has been declining due to higher participation rates and changes in life styles and values. It has therefore, been assumed that the required number of person, that is, the number of persons to be supported by one job, would decline (12) to 2.0 by the year 2001. After the total number of in-migrants (which includes international immigration) is calculated, the next question is how to distribute them to their component age and sex groups. Table A-5 in Appendix A is used for this purpose. The final step is to add the migrants to the projected population from the Cohort Survival method by corresponding age and sex groups (figure 1, the last four blocks). This process is repeated for every single year of the projection period (1971-2001). The result is yearly population projection by age and sex for the Ottawa-Hull CMA.

Since a total projected employment of 448,000 by 2001 is considered to be more likely than the shift-share's value of 518,000, its required population

(10) Blocks up to and including "Adjust last year's ..." show the basic steps of the Cohort Survival method. The bottom four blocks refer to part two of the projection technique employed in this report.

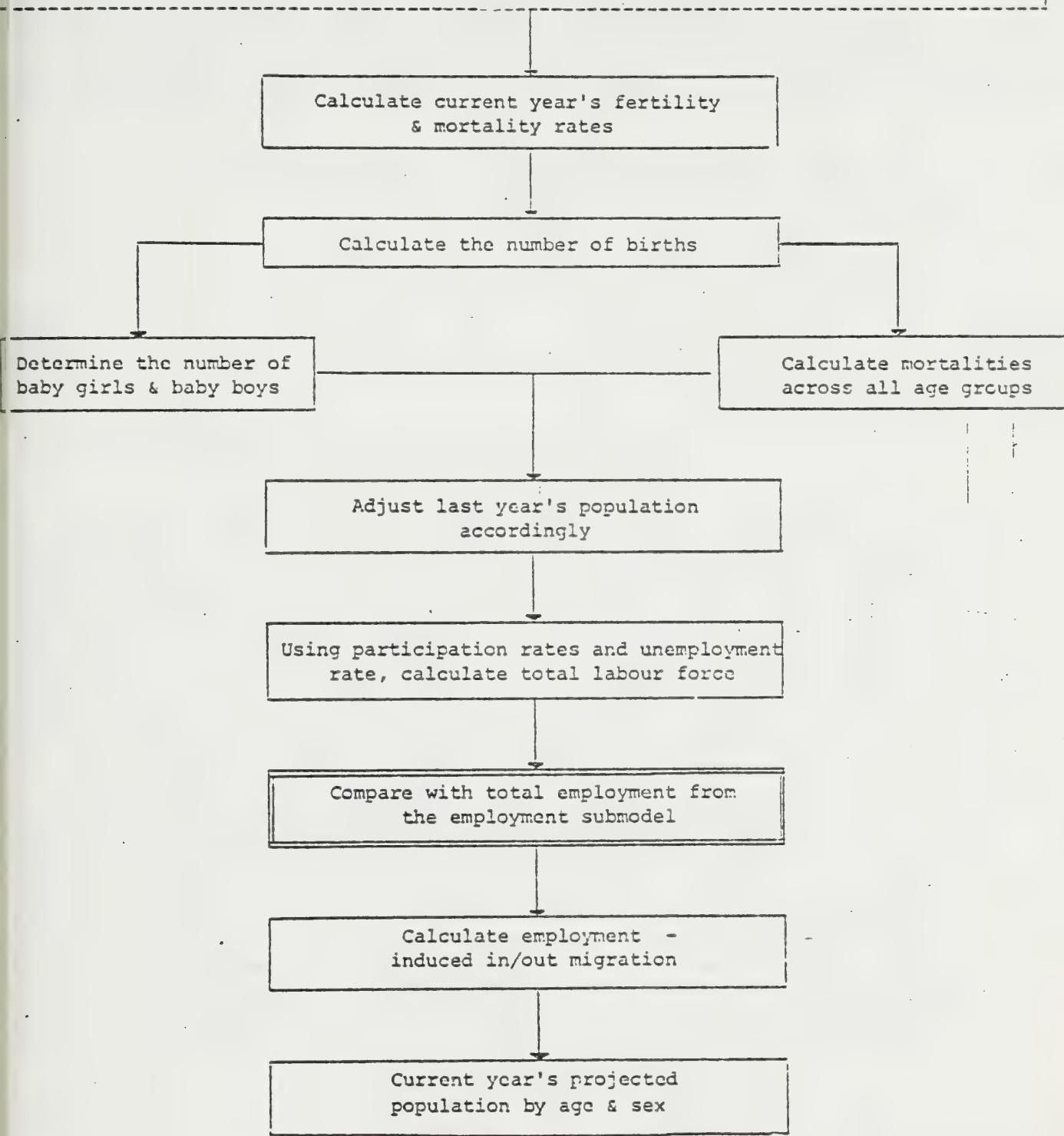
(11) This was thought to be a reasonable assumption over a period of 30 years.

(12) This implies a gross participation rate of 50% which is quite conservative. Many other studies assume 60%-70% participation rate which means one job would support only 1.6-1.4 persons.

Figure 1
POPULATION PROJECTION SUBMODEL

ASSUMPTIONS & INPUTS

1. CMA Population by Age & Sex, 1971 2. Fertility & Mortality Rates, Future 3. Age & Sex Distribution of Migrants



is also considered more likely. This required population is 774,000 by 1986 and 940,000 by 2001 (see table 6).

III.6 Summary of Population Projections

The Cohort Survival method has been used to project the Ottawa-Hull CMA's Population to the year 2001. The results have been adjusted to account for in-migration into the area. In-migration is assumed to be induced by employment opportunity. Since employment has been projected by two different methods, there are two sets of employment projections. Correspondingly, there are two sets of population projections required to support these employment levels. Results are as follows:

Population and Employment Projections, Ottawa-Hull CMA

Year	Employment		Population	
	Medium	High	Medium	High
1986	343,000	378,000	774,000	836,000
2001	448,000	518,000	940,000	1,080,000

III.7: City of Ottawa's Projections for Ottawa-Carleton

Population projections are often made for either the Ottawa-Hull CMA or the National Capital Region rather than for the Regional Municipality of Ottawa-Carleton (see map in Appendix B). The City of Ottawa's projections, as explained in the previous sections, are for the Ottawa-Hull CMA. The division of these projections into the Ontario versus the Quebec side of the CMA is not straightforward task. The economic, social, and cultural factors of the area are the key determinants in locational preferences. These factors have to be studied carefully before such a division is made. However, from 1971 to 1976, the Quebec side of the CMA grew at an average annual rate of 3.1% versus 1.2% for the Ontario side. Furthermore, the relocation of about 15,000 Federal jobs to Hull will surely make living in the Hull area more attractive to some of these civil servants and their families. Therefore, it seems reasonable to expect growth for the Quebec side of the Ottawa-Hull CMA in the future. What percentage of this growth will be at the expense of Ottawa-Carleton cannot be determined accurately. To be on the optimistic side, this report has assumed that the impact of Quebec's growth on Ottawa-Carleton will be negligible. To calculate the Ottawa-Carleton's share of the projected population, it was assumed that this area will grow exactly at the same rate as that of the Ottawa-Hull CMA as a whole (even though it grew at a lower rate during the last 5 years). The projections of 940,000 and 1,080,000 by 2001 for the Ottawa-Hull CMA correspond to an average annual increase of 1.8% and 2.4% respectively over the period 1971-2001. These annual growth rates have been applied to Ottawa-Carleton's 1971 population of 472,000 to arrive at the 2001 projection range of 736,000 to 823,000. These projections are tabulated below:

City of Ottawa's Population Projections

Area	1971*	1986		2001	
		medium	high	medium	high
Ottawa-Hull CMA	619,000	774,000	835,000	940,000	1,080,000
Ottawa-Carleton	472,700	590,100	637,000	736,700	823,000

* Based on 1976 Boundaries.

Table 6

Age and Sex Distribution of Population

Ottawa Hull CMA

Age Group	1971		1986		2001	
	M	F	M	F	M	F
0-4	25,482	23,800	22,757	20,133	24,240	21,733
5-9	32,297	30,760	20,102	16,975	23,325	20,284
10-14	32,889	31,395	25,032	24,081	28,356	25,597
15-19	29,334	29,270	26,170	24,871	24,697	22,216
20-24	28,741	30,185	34,894	37,371	25,154	27,529
25-29	24,593	24,290	41,342	37,898	31,100	28,978
30-34	19,852	19,135	36,790	35,924	38,875	43,950
35-39	18,667	17,975	40,962	41,056	37,045	31,876
40-44	18,074	18,290	20,860	22,107	45,735	45,881
45-49	17,482	18,590	22,378	24,476	37,960	43,467
50-54	14,519	15,490	23,515	24,476	41,162	44,916
55-59	11,852	13,100	17,826	20,528	25,612	28,012
60-64	8,593	9,860	16,309	19,344	30,642	34,773
65-69	14,519	24,085	30,342	50,531	43,448	64,717
Total	296,300	306,225	379,280	394,771	457,350	482,963
All	602,525		774,051		940,313	

Source: 1971 Census of Canada, Statistics Canada
The SCOPE system, City of Ottawa.

III.8: Comparison with Other Studies

Several Federal agencies and the government of Ontario were contacted for population projections for the Ottawa area. The results of their projections are presented in table 7. Certain common aspects of these projections deserve special attention:

- 1 - They all have a target year to project for rather than first selecting a target population and then finding a wide range of time period for it (which is the case with the region).
- 2 - They all use elaborate and tested methodologies.
- 3 - With the exception of the Region, they all make projections for every five year period (projections for years other than 1976, 1986, and 2001 have not been included in table 7).
- 4 - They all project population by age and sex groupings so that the aging and the structure of the population at any given time can be seen (this could not have been included in this table. They are, however, available in the original reports). The Region has completely ignored the age and structure of the population.
- 5 - They all support the City of Ottawa's projection of 736,000 to 823,000 by 2001 for Ottawa-Carleton.
- 6 - The projections were all done a couple of years before they were published in reports. Discussions with the authors of all of these reports, except the Region's, have revealed that, since fertility rates have further declined since these projections were done, they would recommend that their projections be adjusted downward.
- 7 - All these reports, except the Official Plan, place more emphasis on the next 5 to 15 years rather than the next 25 years or more. Timing, staging, aging, and the structure of population have been considered to determine the magnitude of growth. Therefore, they caution against a population target and especially against one for 25 years or more in the future.

The Region's selected population target of 1 million to be achieved sometime between 1998-2015 is clearly contrary to the basic principles of all of these studies. The Region's approach is comparatively rigid, over simplistic, and completely void of a demographic foundation, leaving many questions and concerns unanswered. One has to imagine that sometime in the future there will be a leap into 1 million from the existing ½ million. What happens before this leap and how, (which phenomena are directly related to staging and the structure of the population), are not addressed at all by the Region. What type and size of population are necessary to bring about the target of 1 million are not dealt with. What would be the sources of growth, i.e. how much natural increase, migration, immigration, and what type, seem to be of no concern to the Region. Without addressing these issues, how can one talk about growth? The Official Plan and its accompanying reports, have not explained when and how a population of 1 million is to be reached in Ottawa-Carleton.

III.9: Recommendations

It is well recognized that the City of Ottawa is not responsible for the preparation of the Regional Plan of which population is one component. The exercise leading to table 7 has been carried out to indicate several more reasonable and more substantiated alternatives to the Scale of Future Growth section of the Official Plan. The work of the City of Ottawa, as incomplete as it may be, offers great improvements over this section of the plan. In this context, the following recommendations are made for the Board's consideration.

City of Ottawa's Recommendations

1. That this section of the Plan and all other sections which are dependent on this section be returned to R.M.O.C. and that R.M.O.C. undertake considerable further study, in conjunction with area municipalities, citizens, citizen groups and the Federal and Provincial Governments to:
 1. Redetermine the possible range of population at five year intervals up to the year 2001 using a forecasting model which includes all population variables including employment. This will take into account the latest data from all sources including Federal Government announcements regarding Federal employment and national immigration policies.
 2. Analyze and evaluate all possible ways and means to influence growth rates within the Ottawa-Carleton region.
 3. Analyze and evaluate the social, environmental and economic costs and benefits of alternative growth rates.
 4. Establish a range of population for at least two interim horizon years. These interim projections will form the basis of establishing staging policies. The staging program shall not only establish the location for urban development but also a set of criteria that must be met before proceeding with the subsequent stages of urban development.
 5. Make recommended modifications to Regional Council as to the "desirable", future based on items 1 through 4.

The Region shall complete this review and analysis and report to Regional Council no later than June 1, 1978. In the interim, Regional Council shall make no new commitments to capital works for the urban communities outside the Greenbelt.

3. If the Board does not accept the foregoing recommendations, the following changes are recommended:

That section 2.1.1 of the Regional Official Plan and any other section or schedule of the Plan which is dependent on Section 2.1.1 be revised such that:

1. The planning period does not extend beyond the horizon year 2001.
2. The range of population at the year 2001 be from 740,000 to 820,000,
3. A range of population be accurately assessed for at least two interim horizon years.
4. The text of section 2.1.1 be rewritten to be consistent with recent forecasts made by Statistics Canada and The Ministry of State for Urban Affairs regarding future population growth in Canada and major metropolitan centres.

POPULATION PROJECTIONS, OTTAWA-CARLETON, OTTAWA-HULL CMA, 1971-2001 (x 1000)

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Table 7

No.	Projection Date	Target Year(s)	Method	Area	1971*	1976	Change Per Annum 1971-1976	1981	1986	1991	2001	Total Growth 1971-2001	Change Per Annum 1971-2001	Comments	
					1971*	1976	Change Per Annum 1976-1991	1981	1986	1991	2001	Total Growth 1971-2001	Change Per Annum 1971-2001		
1	City of Ottawa (1)	1977	2001	Stock Approach, Survival	Ottawa-Carleton	472.7	517.9	1.9%	571.1	2.0%	637.0	703.5	823.0	350.2	2.4% High projection assumptions
2	Ontario Government (TEIGA) (2)	1976 and 2001	Component	Ottawa-Carleton	Ottawa-Hull CMA	619.9	679.1	1.9%	749.0	2.0%	835.6	923.1	1080.1	460.2	2.4% The more likely projection (6)
3	C.M.H.C. (3)	1976	1991	Component Survival Modified Ratio	Ottawa-Carleton	619.9	679.1	1.8%	565.1	1.9%	590.1	629.4	736.7	263.9	1.8% The more likely projection
4	M.S.U.A. (4)	1975	2001	Component	Ottawa-Carleton	472.7	508.7	1.5%	565.1	2.2%	629.1	695.4	834.1	361.3	2.5% The most likely projection from a series of five projections. See also note (6) below
5	R.M.O.C. (5)	1972	1998- Selected Target	Ottawa-Carleton	472.7	N.A.	-	N.A.	-	N.A.	N.A.	1000.0	527.2	2.4% The right-most column refers to the years 2015 and 1998.	

* Census 1971 based on 1976 boundaries

- (1) System for Community Planning and Evaluation (SCOPE)
- (2) Ontario's Changing Population, Vol. 2, TEIGA, 1976
- (3) Demographic Division, Central Mortgage and Housing Corporation, Report to be published by May, 1977
- (4) Interim Population Projections for 22 CMA's, Ministry of State for Urban Affairs, 1975
- (5) The Regional Official Plan, Regional Municipality of Ottawa-Carleton, 1972
- (6) The Ottawa-Carleton's share of the CMA population in this table was calculated assuming its growth to be equal to or greater than the growth of the CMA for each time period

PART IVBeyond the year 2001

Projection of population beyond the year 2001 is primarily a mathematical exercise. It is the contention of this report that the uncertainties associated with the projection of employment/economy and therefore, the projection of population, for a period greater than about 25 years, would render these projections mere theoretical possibilities. The validity of any assumption for more than 25 year period is highly questionable. The prediction of the life styles, values, and the behaviour of the next generation regarding reproduction and growth is, at best, a speculative exercise. To insist on a population of 1 million by the year 2015, as the Region does, or, for that matter, to insist on any one level of population for the year 2015 for the RMOC, implies a certain knowledge or assurance about the desires and the behaviour of the next generations which is completely unfounded. Such guess-work and speculation should not form the basis of an Official Plan. It is, therefore, the City of Ottawa's position that the Official Plan should address the growth prospects and dynamics of the region for the next 20 to 30 years rather than the next 25 to 40 years. (13)

If one feels compelled to consider the years beyond 2001, however, one should, at least, consider the structure of the population in order to assess how much growth (births) is possible from the population in 2001. Again, this should be done in the context of a larger area, preferably at the provincial or the national level, to ensure that the maturation, (i.e. the aging) of the base population is taken into account. This practice can reveal the direction and magnitude of growth, given certain assumptions. Without this exercise, there will always be a mystery regarding the sources and the types of expected growth.

Notwithstanding the City of Ottawa's position on the preferred planning period and the recommended staging during that period, the City undertook to examine the likelihood of reaching a population of 1 million in the RMOC by 2015 under the assumptions specified in Appendix A. To be very optimistic again, the high projected population of 823,000 by the year 2001 was selected. This total population, by its component age and sex structure, underwent another 50 years of simulation. The results are presented in table 8. It shows that the population of 2001, i.e. 823,000, for RMOC will continue to grow, but at a declining rate. It will not reach one million until the year 2046, which is clearly too far into the future to plan for at the present time.

The City of Ottawa also requested the Government of Ontario (TEIGA) to continue its projection for the RMOC until a population of one million is reached. Since fertility rates have been continually decreasing since the mid 1970's and are expected to continue this trend, and since, partially because of this drop in fertility rates, population growth in the RMOC has been low to moderate during the 1971-1976 period, the Government of Ontario's current position is to reduce its previously projected population range of 747,000-811,000 for the RMOC by the year 2001. Their recommended population projection for the RMOC by the year 2001, is now a maximum of 750,000. It was agreed, however, that, for the purposes of this exercise, a population level greater than 750,000 but less than 811,000 should be used to ensure consistency and optimism for the RMOC area. This selected projection resulted in a population of approximately 783,000 for the RMOC by the year 2001. The projection (iteration) of this population by its component age and sex structure was continued for another 50 years. (table 9).

Consistent with the City of Ottawa's extended projection, table 9 suggests that the population of the RMOC in the year 2001, will continue to increase at a declining rate and that it will stabilize sometime around the year 2030 at an approximate value of 917,000. Tables 8 and 9 are represented in figure 2.

It is interesting to note that, although the City of Ottawa and the Government of Ontario have employed two very different methodologies, they both show a flattening of population growth sometime between the years 2026 and 2030.

(13) Furthermore, as recommended previously, the Plan should establish clearly defined staging of growth so that the emphasis on planning will be as much or more on the next 10-15 years rather than the end of the planning period.

his confirms the conclusion that the existing population will mature after 2001 and that natural increase will approach zero. This phenomenon has already occurred in some communities in North America as well as in Europe. However, it should be emphasized again that the years beyond 2001, are too far into the future to make any projections with a reasonable degree of certainty. Figure 2 is merely intended to show that zero or negative natural increase in the RMOC area is a possibility. Given the validity of the assumptions in Appendix beyond 2001, then figure 2 would become a certainty for this area. In any case, it illustrates the rigidity and the superficiality or the simplicity of the Region's selected target of one million population during 1998-2015 for the MOC area.

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Table 8
POPULATION PROJECTION FOR OTTAWA-CARLETON

(X 1000)

	<u>Population</u>	<u>Change</u>
1971	472.7	
1976	517.9	45.2
1981	571.1	53.2
1986	637.0	65.9
1991	703.5	66.5
2001	823.0	119.5
2006	864.1	41.1
2011	901.6	37.5
2016	930.4	28.8
2021	953.7	23.3
2026	969.9	16.2
2031	979.6	9.7
2036	988.4	8.8
2041	995.3	6.9
2046	1,000.2	4.9

SOURCE: The SCOPE System, high growth assumption
City of Ottawa

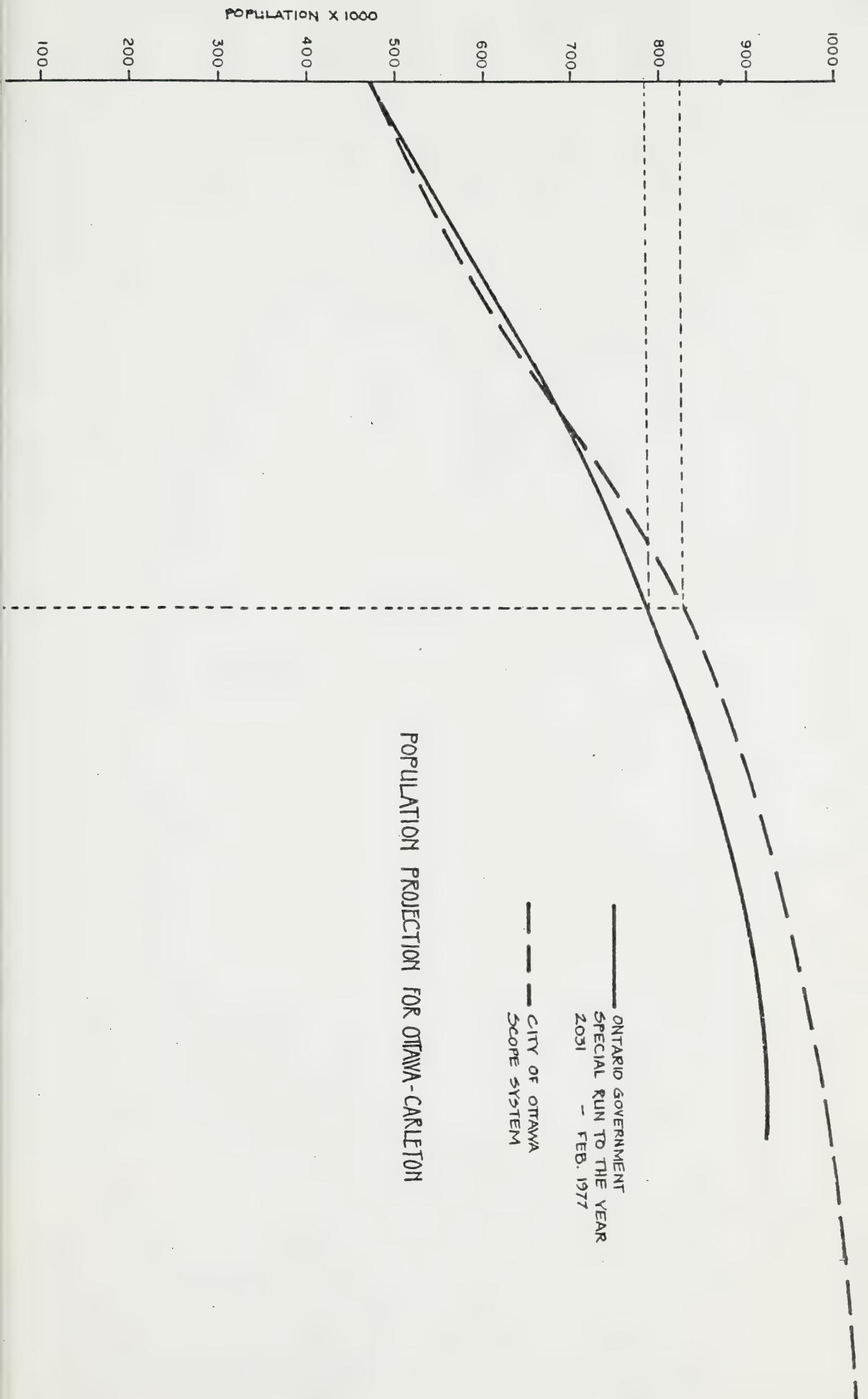
Table 9
POPULATION PROJECTION FOR OTTAWA-CARLETON

(X 1000)

YEAR	POPULATION	ABSOLUTE CHANGE	YEAR	POPULATION	ABSOLUTE CHANGE
1971	472.5	--	2001	782.7	8.8
1972	483.2	10.7	2002	790.7	8.0
1973	494.1	10.9	2003	798.4	7.7
1974	505.2	11.1	2004	806.1	7.4
1975	516.5	11.3	2005	813.5	7.4
1976	527.8	11.3	2006	820.8	7.3
1977	539.3	11.5	2007	827.9	7.1
1978	550.9	11.6	2008	834.8	6.9
1979	562.5	11.6	2009	841.5	6.7
1980	574.1	11.6	2010	848.0	6.5
1981	585.7	11.6	2011	854.2	6.2
1982	597.3	11.6	2012	860.2	6.0
1983	608.9	11.6	2013	865.9	5.7
1984	620.3	11.4	2014	871.3	5.4
1985	631.6	11.3	2015	876.5	5.2
1986	642.7	11.1	2016	881.4	4.9
1987	653.7	11.0	2017	885.9	4.5
1988	664.4	10.7	2018	890.2	4.3
1989	674.9	10.5	2019	894.2	4.0
1990	685.1	10.2	2020	897.8	3.6
1991	695.0	9.9	2021	901.2	3.4
1992	704.7	9.7	2022	904.2	3.0
1993	714.1	9.4	2023	906.9	2.7
1994	723.3	9.2	2024	909.3	2.4
1995	732.3	9.0	2025	911.4	2.1
1996	741.1	8.8	2026	913.2	1.8
1997	749.7	8.6	2027	914.7	1.5
1998	758.2	8.5	2028	915.9	1.2
1999	766.5	8.3	2029	916.8	.9
2000	774.7	8.2	2030	917.4	.6
			2031	917.7	.3

SOURCE: Ontario Government
 Special Run to the Year 2031
 February, 1977

Figure 2



APPENDIX A

Projected Fertility, mortality, and the
Labour Force Participation Rates

Table A-1

AGE-SPECIFIC FERTILITY RATES -- ONTARIO -- 1961-1974

Fertility Rates per 1,000 total women by age groups							Total Fertility Rate	Gross Reproduction Rate
15-19	20-24	25-29	30-34	35-39	40-44	45-49		
69.5	239.8	211.6	134.2	69.8	21.9	1.6	3,742	1.824
64.5	239.9	210.5	133.9	65.6	21.9	1.4	3,689	1.796
60.3	233.7	208.1	133.1	66.2	21.1	1.2	3,618	1.759
57.8	219.7	202.4	128.6	64.6	20.4	1.6	3,475	1.686
58.3	192.9	180.6	114.5	59.3	17.8	1.5	3,125	1.521
57.4	171.3	160.2	98.8	52.8	16.2	1.3	2,790	1.361
53.0	162.7	151.2	89.4	46.4	13.4	1.0	2,586	1.257
49.2	155.2	148.8	84.4	41.9	11.7	1.0	2,461	1.198
48.5	152.9	152.5	84.5	39.2	10.9	0.8	2,447	1.191
49.4	148.5	152.2	83.3	36.4	9.8	0.6	2,401	1.168
44.2	137.2	145.9	77.4	31.2	7.8	0.4	2,221	1.078
42.7	122.2	138.6	72.8	27.2	6.4	0.3	2,051	0.993
40.9	119.8	132.2	68.0	25.1	5.6	0.3	1,960	0.952
38.3	114.6	129.4	66.9	22.5	4.8	0.3	1,884	0.915

RCF: Vital Statistics, 1974, P/15
Statistics Canada

Table A-2

(Number of Births per Thousand Women)

Age Groups	1972			1980			1985		
	low	medium	high	low	medium	high	low	medium	high
15-19	87.14	88.13	89.27	91.32	111.76	132.19	103.36	126.77	150.19
20-24	131.14	132.43	133.71	122.00	149.30	176.60	125.74	154.22	182.71
25-29	110.89	111.98	113.06	95.70	117.11	138.53	92.98	114.05	135.10
30-34	69.98	70.66	72.54	56.85	69.58	82.30	52.73	64.67	76.61
35-39	33.03	33.35	33.68	25.24	30.90	36.54	22.35	27.42	32.48
40-44	9.65	9.75	9.84	6.85	8.39	9.92	5.75	7.05	8.35
45-49	.84	.85	.86	.53	.66	.77	.41	.51	.60
General Fertility Rate	62.90	63.90	64.68	56.92	69.68	82.40	57.61	70.67	83.72
Fertility Rate	2.04	2.05	2.08	1.81	2.21	2.61	1.81	2.21	2.62
Total Fertility Rate	2040.0	2059.9	2085.9	1810.0	2215.0	2619.9	1810.0	2219.9	2629.9

Source: Projections No. 10, 15, and 16.
 Population Estimates.
 Census Field
 Statistics Canada, 1972.

1. General Fertility Rate: Number of births per 1000 women, 15 - 49 years of age.
2. Fertility Rate: Projected number of children per woman in the child bearing period of 15 - 49 years of age.
3. Total Fertility Rate: Index of total fertility related to the sum of fertility rates.

* These rates are currently being revised by Statistics Canada. The revised rates are expected to be lower.

Table A-3
DEATH RATE PROJECTIONS, 1971-2001

YEARS E GROUPS	1971		1981		1991		2001	
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
0-1	24.0	19.1	16.2	13.1	11.4	9.5	11.4	9.5
1-4	.9	.8	.6	.6	.5	.5	.5	.5
5-9	.6	.4	.4	.3	.4	.3	.4	.3
10-14	.5	.3	.4	.2	.3	.2	.3	.2
15-19	1.3	.5	1.2	.5	1.2	.4	1.2	.4
20-24	1.8	.6	1.9	.5	1.9	.5	1.9	.5
25-29	1.5	.6	1.5	.5	1.5	.5	1.5	.5
30-34	1.6	.8	1.6	.7	1.5	.6	1.5	.6
35-39	2.2	1.1	2.2	1.2	2.2	1.1	2.2	1.1
40-44	3.4	1.7	3.5	1.8	3.5	1.6	3.5	1.6
45-49	5.7	2.9	5.6	3.0	5.6	2.7	5.6	2.7
50-54	9.4	4.8	9.2	4.5	9.2	4.2	9.2	4.2
55-59	15.2	8.2	14.8	6.9	14.6	6.3	14.6	6.3
60-64	23.7	13.7	23.2	10.4	23.2	9.2	23.2	9.2
65 +	68.5	47.9	68.5	47.9	68.5	47.9	68.5	47.9

SOURCE: Estimates based on "Mortality Projections for Canada, 1950-1990", K.S. Gnanasekaran, Census Field, Statistics Canada

Table A-4

PROJECTED LABOUR FORCE PARTICIPATION RATES

AGE GROUPS	1971		1976		1981 - 2001	
	CANADA	ONTARIO	CANADA	ONTARIO	CANADA	ONTARIO
MEN						
14-19	37.3%	49.9%	36.4%	48.4%	36.7%	48.8%
20-24	86.0	89.6	85.3	88.7	85.0	88.4
25-29	97.3	95.3	97.3	95.3	97.3	95.3
30-34	97.3	95.3	97.3	95.3	97.3	95.3
35-39	97.7	96.0	97.7	95.7	97.7	95.7
40-44	97.7	96.0	97.7	95.7	97.7	95.7
45-49	96.0	94.1	96.0	94.0	96.0	94.0
50-54	96.0	94.1	96.0	94.0	96.0	94.0
55-59	85.9	84.9	85.7	84.8	85.5	84.6
60-64	85.9	84.9	85.7	84.8	85.5	84.6
65 & over	24.3	26.4	22.9	24.3	21.7	23.4
WOMEN						
14-19	30.9	40.6	30.5	39.9	31.1	40.7
20-24	59.4	66.6	61.2	68.5	62.0	69.4
25-29	37.1	50.1	39.8	53.7	41.0	55.3
30-34	37.1	50.1	39.8	53.7	41.0	55.3
35-39	40.8	50.5	44.8	55.1	47.0	57.8
40-44	40.8	50.5	44.8	55.1	47.0	57.8
45-49	43.4	50.9	47.6	55.6	50.0	58.5
50-54	43.4	50.9	47.6	55.6	50.0	58.5
55-59	34.6	39.0	38.6	43.2	41.0	45.9
60-64	34.6	39.0	38.6	43.2	41.0	45.9
65 & over	06.4	08.5	07.0	09.2	07.2	09.5

SOURCE: Labour Force Data, P/l, 1971 Census, Statistics Canada

Estimates based on "Population, Family, ... to 1980", W.M. Illing,
Economic Council of Canada, 1967

Table A-5

Age and Sex Distribution of Migrants
into the Ottawa-Hull CMA

1971 - 2001

<u>Age Groups:</u>	<u>Male</u>	<u>Female</u>
0-4	3.50%	3.50%
5-9	5.25	5.25
10-14	3.75	3.75
15-19	3.25	5.50
20-24	7.75	10.75
25-29	9.50	6.25
30-34	5.25	4.25
35-39	3.50	3.50
40-44	2.00	2.00
45-49	1.00	1.00
50-54	0.25	0.25
55-59	0.00	0.00
60-64	0.25	0.25
65 and over	4.25	4.25
	<hr/> 49.50	<hr/> 51.50

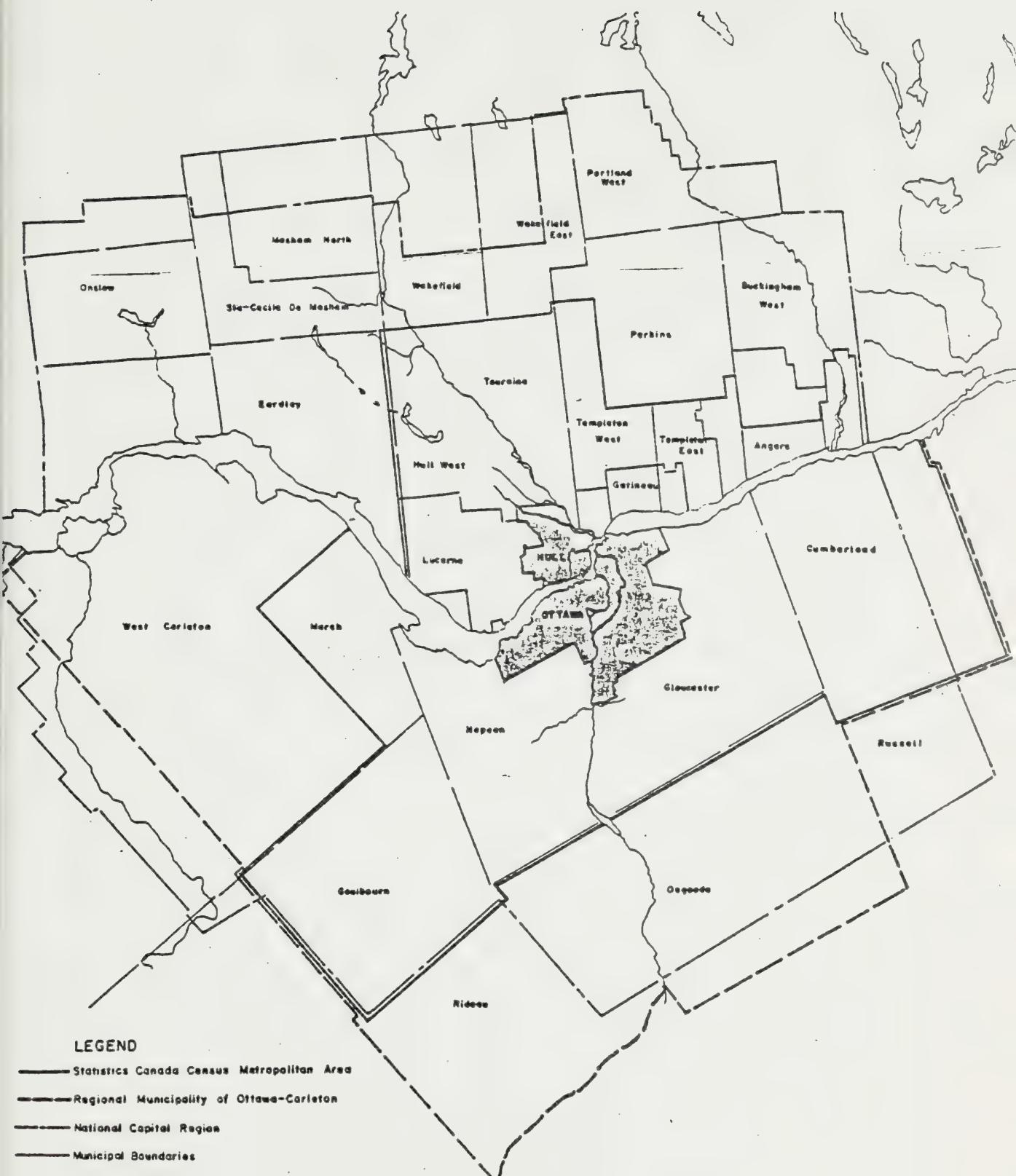
SOURCE: Census Division,
Statistics Canada

APPENDIX B

Delineation of the Areas of:

- 1 - The National Capital Region (NCR)
- 2 - The Ottawa-Hull Census
Metropolitan Area (CMA)
- 3 - The Regional Municipality of
Ottawa-Carleton (RMOC)

MAP OF NATIONAL CAPITAL REGION 1971



APPENDIX CScale of Future Growth

Official Plan of The Regional Municipality of Ottawa-Carleton

2-1

PART 2

SCALE AND STRUCTURE OF GROWTHSCALE OF FUTURE GROWTHPerspective

In the twenty year period 1951-1971, population and employment in the planning area almost doubled while the number of households increased by one hundred and thirty-four percent. The Ottawa-Hull metropolitan area, of which the urbanized section of the planning area is part, is the fourth largest metropolitan area in the country and is expected to be affected by the general trend to increasing urbanization.

This trend has been analyzed in a number of studies. It indicates that, if economic growth continues in much the same way as in the recent past, and taking into account the employment base and size of existing cities:

- The population of Canada will increase from 21.5 million in 1971 to perhaps 38 million at the turn of the century - an increase of about 75%.
- The population living in the twelve largest cities will increase from 8.6 million to 24.8 million, an increase of nearly 200%. Thus almost 75% of Canada's population will live in these major cities.
- Montreal and Toronto will have populations of the order of 6 million persons, while Vancouver will be near the 2.5 million mark.
- Quebec City, Hamilton, Edmonton, Winnipeg and Ottawa-Hull will have populations of between 1 and 1.5 million.

Growth in the planning area is related to future population growth in the country and to a lesser extent in the world. A change in the rate of growth and the level of population in the planning area will affect other urban areas in Canada. The actual rate of growth in the planning area will depend primarily upon the policy of the federal government, secondarily on policies of the provincial government, and to a much lesser extent on municipal policies. Studies in the National Capital Region have concluded that population will reach a level of between 1 and 1.5 million by the early part of the twenty-first century, based on:

- The nature of employment, which is predominantly in government and other service occupations. The increasing demand for such services and their labour-intensive characteristic is likely to lead to a rapid increase in job opportunities.
- The urban area is of sufficient size to naturally generate and attract employment because the local market can support additional services.

For the purposes of this plan it is assumed the economy of the country is likely to develop in the future in a way similar to that of the recent past. However, the assumptions for this plan also recognize that it is not certain that population and employment growth in the planning area will continue at the same rate as in recent years. Policies of the Federal Government as well as changing attitudes towards work, birth control, and the consumption of energy and resources will influence the rate of growth. There is also a body of opinion developing that, even if growth of the order of magnitude previously discussed does come about in the country, it should be distributed differently than if current economic trends were followed. If this opinion is confirmed and is possible of being made effective, the redistribution of national and provincial urban development could occur over the long term. If this comes about, the prospect for the planning area would be substantially changed and would have to be reviewed.

The two conflicting aspects towards growth - recent trends supporting the assumption of an increasingly large urban population within the planning area and a concern with whether growth of this order should take place - create a dilemma, particularly as there are few opportunities to control the rate of growth, and those which show promise are available to other than the municipal level of government.

The main employer in the planning area is the Government of Canada. The current building program of the Canadian Government in the Capital provides for continued building to house increasing numbers of federal employees until the early 1980's. With this commitment, and the understanding that major changes in public policy, such as the location of government functions in other Canadian centres would take several years to achieve, Council believes this plan should make provision for urban growth at current rates for a period of not less than ten years, and for needs that may arise beyond that period on the assumption that a population of 1,000,000 in the planning area may be reached. However, it is recognized that there is a major concern with regard to continued urban growth in the planning area. Periodic review of this plan will consider the consequences of alternative growth rates, the possibilities of influencing growth rates, and the effect of changes in the rate on achieving the goals and objectives for development of the planning area.

It is also desirable, in Council's opinion, to have set out in this plan a time frame for the future within which it appears most likely that certain thresholds will be reached in the level of total population in the planning area. This will facilitate the co-ordination of activities of provincial and municipal governments and agencies, and provide reference, that can be measured against actual experience, for staging and timing the implementation of this plan.

If population increases at the same rate as experienced in the period 1961-71, a threshold of one million persons will be reached in 1998. If population increases by the same numerical amount each decade as experienced in the period 1961-71, the same threshold will be reached in 2015. The effect of these rates of growth on the time at which specified population thresholds will be attained is shown in Table 2-1. Also shown is the median rate.

Table 2-1

Year Population Thresholds Attained:
Alternative Growth Rates

<u>Population Level</u>	<u>Year Reached</u>		
	With Constant Percentage Increase	Median	With Constant Numerical Increase
471,931		1971	
600,000	1980	1981	1982
750,000	1988	1991	1994
1,000,000	1998	2006	2015

It is intended that the foregoing table be for reference only. It does not reflect any objective of this plan.

Therefore Council proposes:

- (1) To base its long term planning strategy on a population threshold consistent with recent forecasts for the planning area. Accordingly this plan is based on the assumption that population in the planning area could increase to one million persons in approximately 30 years.
- (2) That periodic review of this plan shall incorporate an assessment of different policies that might be available to reduce or accelerate the rate of growth in the planning area on the goals and objectives of this plan.

2.1.2 Land Area Required

The total land area that would be required for urban purposes at a threshold population of one million mainly depends upon:

- The densities of living and working areas
- The amount of land used as major open space within the urban area
- The amount of land used by major institutions
- The amount of vacant land within the urban area

These factors vary from place to place and over time. However, there is a degree of consistency in the relationship between the number of people living in an urban area and the density at which they live, the amount of land needed for specific urban uses and the total amount of land used for all urban purposes.

If these relationships were constant and Ottawa typical of cities in Ontario¹, the number of acres required for urban purposes in the planning area would increase from 35,000 acres at approximately half a million population

(1) See "Urban Land Use in Ontario, Areas & Intensities", Department of Municipal Affairs, Ontario.

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Treasury, March 1976.

Meetings (Partial List)

1. T. Schweitzer, A. Barsony, economists, Economic Council of Canada.
2. E. Suichies, economist, Development Planning Associates.
3. T. Yoo, economist & demographer, Ministry of States for Urban Affairs.
4. D. Hart, Planning co-ordinator, Department of Public Works.
5. C. Bigenwald, Israel Lyon, et al, economists & planners, TEIGA.
6. J. Schuton, et al, planners, N.C.C.
7. R. Rogalsky, economist, DREE
8. A Divic, demographer, C.M.H.C.
9. C. Wong, R. Kogler, demographers, TEIGA
10. K.O. Gnanasekaran, J. Perreault, demographers, statistics Canada.
11. J. Rook-Greene, President, Commercial Industrial Development Corporation.
12. C. Barrtelle, principal, Ottawa Board of Education.

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